

## REMARKS

In the Office Action, Claims 17-22 and 27-29 were examined and stand rejected. In response to the Office Action, Claims 17-22 and 27-29 are amended, no claims are cancelled and no claims are added. Applicants respectfully request reconsideration of pending Claims 17-22 and 27-29, in view of the following remarks.

### I. 35 U.S.C. §§ 102 and 103: Rejection of Claim 27

The Patent Office rejects Claim 27 under 35 U.S.C. §102(e) as anticipated by or, in the alternative, under 35 U.S.C. §103(a) as obvious over U.S. Patent No. 6,166,439 issued to Cox (“Cox”). Applicants respectfully traverse this rejection.

Regarding Claim 27, Claims 27 is amended to recite the following claim feature, which is neither disclosed nor suggested by Cox:

at least one bond pad formed directly on the insulating layer;  
a composite film comprising:  
a first layer, and  
a second layer of a material different than a material of the first layer,  
wherein the first layer is disposed between the insulating layer and the  
second layer,  
wherein the first layer and the second layer comprise one common  
chemical element other than silicon, and  
wherein the second layer is a passivation layer formed on the first layer  
and a portion of a surface of the bond pad that is less than the entire surface.  
(Emphasis added.)

In contrast to the above-recited features of amended Claim 27, Cox is directed to resistive-capacitive (RC) delays associated with conductive interconnection lines of integrated circuit devices. As recognized by Cox:

In order to reduce capacitive coupling and therefore reduce capacitive crosstalk, low dielectric constant (low-K) materials have been developed to replace conventional dielectric/insulative materials that lie between conductive lines in order to insulate one conductive line from the other. (col. 1, lines 41-45.)  
(Emphasis added.)

Accordingly, Cox discloses, and is therefore directed to, the following objective:

. . . the formation of a semiconductor device having a low dielectric constant material applied between conductive lines which may serve to bond with a substrate and upper or topside layer of the IC so as to facilitate reduction of

capacitive crosstalk between the conductive lines, and mitigate delamination and cracking problems. (col. 4, lines 40-46.) (Emphasis added.)

To achieve the above-described goal, Cox discloses:

FIGS.4a-4d are schematic cross-sectional illustrations of semiconductor devices fabricated in accordance with the present invention wherein the low dielectric constant (LDC) material 59 has been dispersed between the conductive lines 54, 56 and 58. As noted above, the LDC material includes polymers that are bonded between the insulating layer 50a and dielectric material 90. Since the polymers are not cross-linked air pockets are encapsulated between the polymers in the gaps between the conductive lines 54, 56 and 59. The air pockets and LDC material 59 provide for an insulative medium between adjacent conductive lines having low dielectric constant. (col. 8, lines 36-47.) (Emphasis added.)

As indicated by the cited passage above, Cox explicitly requires that the low dielectric constant (LDC) material 59 is not cross-linked to enable the formation of air pockets in the gaps between conductive lines 54, 56 and 58 to provide an insulative medium between adjacent conductive lines have a low dielectric constant. (*See, supra.*) Accordingly, the disclosure in Cox is summarized by Cox as follows:

Thus, the present invention provides for a low dielectric constant material 59 and method thereof which may be employed as an insulator between conductive lines 52 of an integrated circuit 80 to mitigate capacative crosstalk between the conductive lines 52. Since the LDC material 59 comprises a polymeric material that is not crosslinked, air pockets may be encapsulated therein. As a result, the overall dielectric constant of the material (e.g., air pockets and polymeric material) between the conductive lines 52 is substantially low. (col. 10, lines 6-15.) (Emphasis added.)

Claims 27 describes a bond pad of a circuit structure and a composite film including a second layer formed on a portion of a surface of a bond pad. Cox is describing interlayer dielectrics, not passivation layers associated with bond pads. Hence, Applicants respectfully submit that whether viewed under 35 U.S.C. §102(e) or, in the alternative, under 35 U.S.C. §103(a), Applicants respectfully submit that the Patent Office fails to establish a *prima facie* case of either anticipation or obviousness of Claim 27.

Applicants respectfully request that the Patent Office reconsider and withdraw the §102(e) rejection and the §103(a) rejection of Claim 27.

Accordingly, Claims 27, as amended, is patentable over Cox, as well as the references of record. Consequently, Applicants respectfully request that the Patent Office reconsider and withdraw the §103(a) rejection of Claim 27.

## **II. 35 U.S.C. §103(a): Rejection of Claims 17-19, 21-22 and 29**

The Patent Office rejects Claims 17-19, 21, 22 and 29 under 35 U.S.C. §103(a) as obvious over Cox in view of Applicants' Prior Art ("APA"). Applicants respectfully traverse the Patent Office's rejection.

Applicants respectfully submit that there is no motivation to combine Cox and APA. A person of ordinary skill in the art would not look to Cox's teachings of ILD material (e.g., increasing a dielectric constant through the creation of air pockets) in determining material or techniques for passivating a circuit structure. It cannot be assumed that because the claimed invention relates to, among other things, dielectric material used in forming integrated circuits, other references describing dielectric material for different purposes are necessarily relevant. One purpose of the passivation layer in Claim 17 is to protect the circuit structure. (*See, Application, pg. 10, lines 8-9.*) Cox, on the other hand, is directed to insulating interconnect lines with a high dielectric constant material.

Claims 18, 19, 21 and 22 depend from Claim 17 and therefore contain all the limitations of that claim. For at least the reasons stated with respect to Claim 17, Claims 18-9 and 21-22 are not obvious over the cited references. Applicants respectfully request that the Patent Office reconsider and withdraw the §103(a) rejection of Claims 12, 18, 19, 21 and 22.

Claim 29 depends from Claim 27. Applicants believe that the impropriety of combining Cox and APA to purportedly arrive at the teachings of Claim 17 apply equally to Claim 29. Applicants respectfully request that the Patent Office withdraw the rejection of Claim 29 under 35 U.S.C. §103(a).

## **III. 35 U.S.C. §103(a): Rejection of Claim 20**

The Patent Office rejects Claim 20 under 35 U.S.C. §103(a) as obvious over Cox in view of APA and U.S. Patent No. 6,046,101 issued to Dass et al. ("Dass"). Dass is cited for disclosing

an adhesion layer of silicon oxynitride. Applicants respectfully traverse the Patent Office's rejection.

Regarding Claim 20, Claim 20 is dependent from Claim 17. Hence, Applicants respectfully submit that the Patent Office's citing of Dass fails to rectify the deficiencies of Cox and APA as a suitable combination for a 35 U.S.C. §103(a) rejection. Hence, for at least the reasons described above, Applicants respectfully submit that Claim 20 is patentable over the combination of Cox in view of APA and further in view of Dass.

Consequently, Claim 20, based on its dependency from Claim 17, is also patentable over the combination of Cox in view of APA and further in view of Dass. Accordingly, Applicants respectfully request that the Patent Office reconsider and withdraw the §103(a) rejection of Claim 20.

#### **IV. 35 U.S.C. §103(a): Rejection of Claim 28**

The Patent Office rejects Claim 28 under 35 U.S.C. §103(a) as obvious over Cox in view of Dass. Applicants respectfully traverse the Patent Office's rejection.

Claim 28 depends from Claim 27. As noted above with respect to Claim 29, Applicants do not believe Cox is a proper reference for a 35 U.S.C. §103(a) rejection of Claim 28. Regarding the Patent Office's citing of Dass, Applicants respectfully submit that the Patent Office's citing of Dass fails to correct the problem of Cox. Applicants respectfully requests that the Patent Office reconsider and withdraw the §103(a) rejection of Claim 28.

## **CONCLUSION**

In view of the foregoing, it is believed that all claims now pending patentably define the subject invention over the prior art of record and are in condition for allowance, and such action is earnestly solicited at the earliest possible date.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2666 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17, particularly, extension of time fees.

Respectfully submitted,

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